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Memorandum

To: CaSandra Cooper Gates

From: Gordon Arbuckle, John Sharp

Date: November 22, 2017

Re: DOI and EPA Jurisdiction Over OCS Air Emissions

Summary of Conclusions

Air pollutant emissions from outer continental shelf ("OCS") sources are subject to one of two separate regulatory programs, depending on the location of the operation. The Department of the Interior ("DOI") has jurisdiction over OCS sources in federal waters in the Western Gulf of Mexico, most of the Central Gulf, and the OCS off Alaska's North Coast. The Environmental Protection Agency ("EPA") has jurisdiction over sources in all other OCS areas.

LOOP's offshore marine terminal and operations at the terminal which is located in the Gulf of Mexico west of 87.5 degrees longitude, are subject to exclusive DOI regulation. EPA has no jurisdiction over the terminal or operations which take place there.

History of Regulation of Air Emissions the OCS

1953 - The Submerged Lands Act [1] and the OCSLA [2] establish federal jurisdiction and governance over operations on the OCS. The 1953 OCSLA did not specifically address air emissions, but gave the Secretary of the Department of the Interior general authority over the prevention of waste and conservation of the natural resources of the OCS.[3]

1970 - The Nixon Administration establishes the EPA, and the Clean Air Act of 1970,[4] which is the foundation of much of today's federal air emissions program. Because the 1953 OCSLA did not specify which federal agency would have jurisdiction over the air quality effects of OCS facilities, uncertainty arises as to the jurisdiction of the EPA over air quality control in the OCS.[5]

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[1] 67 Stat. 29, May 22, 1953.

[2] 67 Stat. 464, August 7, 1953.

[3] 43 U.S.C. § 1334 (1958).

[4] 42 U.S.C. §7401 et seq.

[5] *See, e.g., CRS Memorandum, Jurisdiction of OCS Air Quality Control in 1978 OCSLAA*, September 23, 1988.

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1978 -

- April 18 - The EPA formally asserts its authority to regulate air emissions from OCS sources.[6]
- September 18 - Congress passes the OCSLA of 1978[7], specifically giving DOI the exclusive authority to regulate the emissions from offshore oil and gas sources specifically including air emissions from operations at offshore facilities.[8]

1979 - The Ninth Circuit Court of Appeals affirms that DOI, not EPA, has jurisdiction over the regulation of air emissions from offshore sources.[9]

1980 - DOI issues air emissions regulations for offshore oil and gas operations.[10]

1990 - Based on continued concerns from stakeholders in California and Florida, Congress amends the CAA to add Section 328, authorizing EPA to implement certain air quality provisions of the Clean Air Act at offshore facilities, excluding those West of 87.5 degrees longitude (the Western and Central Gulf of Mexico).

1992 - EPA promulgates regulations for those OCS sources under its jurisdiction.

The DOI Air Emissions Program

DOI's authority to regulate air emissions from offshore sources was confirmed by the 1978 OCSLA amendments. Sources subject to DOI's regime are subject to specific limitations on emissions only if their emissions would "significantly affect" a state's air quality. In determining whether there is a significant effect, DOI applies a two-step exemption and significance determination approach. The projected emissions of volatile organic compounds ("VOCs") from any facility which is not exempt based on the analysis described below will be deemed to significantly affect the air quality in the nearest onshore area.[11]

Impact of DOI Emissions Regulation on LOOP

DOI's OCS air quality program is administered by BOEM and the Bureau of Safety and Environmental Enforcement's ("BSEE"). BOEM regulates air quality emissions from OCS sources as part of its review of exploration and development plans, and right-of-use and right-of-way

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[6] 43 *Federal Register*

[7] P.L. 95-372, encoded as 43 §§ 1331-1356.

[8] DOI subsequently delegated most of this authority to the Minerals Management Service, which after the 2010 Deepwater Horizon incident, was replaced by the Bureau of Ocean Energy Management, Regulation and Enforcement, now the Bureau of Ocean Energy Management ("BOEM") and the Bureau of Safety and Environmental Enforcement ("BSEE").

[9] *California v. Kleppe,* 604 F.2d 1187 (9th Cir. 1979).

[10] 45 *Federal Register* 15128, March 7, 1980.

[11] 30 C.F.R. § 550.303(f)(2).

applications in OCS areas in the Western and Central Gulf of Mexico and the Arctic. While existing sources do not submit Exploration Plans or Development and Production Plans for BOEM review, BSEE's Environmental Compliance Division verifies compliance and enforcement of environmental laws and regulations pertaining to air quality. This authority includes the right to take action to ensure that existing facilities operating on the OCS are in compliance with BOEM approved plans and related conditions of approval for air emissions. BSEE may issue Incidents of Noncompliance ("INCs") if violations are noted.

The regulations governing the air quality program are found at 30 C.F.R. Part 500. BOEM may review air quality compliance for facilities described in a new or revised Exploration Plan ("EP") or Development and Production Plan ("DPP"),[12] or an affected state may request that the Regional Supervisor supply basic emission data from existing facilities when such data are needed for the updating of the State's emission inventory.[13] As noted below, the Bi-directional Pipeline Project will not "significantly affect" air quality in any state and should not trigger emissions review requirements: LOOP will not be filing an EP or DPP, and the project should not trigger a data request from the State of Louisiana. It is nevertheless useful to determine whether or not LOOP is otherwise exempt from air quality review in accordance with the regulation's exemption formulas.[14]

In determining whether a facility is exempt from further air quality review, the highest annual-estimated total amount of emissions of each air pollutant, from the facility and vessels serving it is compared to the emission exemption amount for each air pollutant calculated using the formulas provided. For volatile organic compounds ("VOCs"), the primary concern for an offshore loading facility, the exemption level is calculated by the following formula: $E = 33.3D$ (where E is the emission exemption amount expressed in tons per year, and D is the distance of the proposed facility from the closest onshore area of a State, expressed in statute miles). Assuming that the loading operations take place 20.7 statute miles offshore, the maximum allowable VOCs to qualify for the exemption would be 689 tons/year. Loop's calculated emissions (attached) based on conservative assumptions conclude that VOC emissions from contemplated loading operations at the terminal will be well below that trigger point.

Conclusion

The legislative history of both the OCSLA and the CAA makes clear that LOOP's operations are subject only to DOI, and not EPA, jurisdiction. In designing, building, and operating the Bi-directional Oil Pipeline project, LOOP is not required to engage in the EPA permitting process or to consider EPA emissions standards.

Anticipated VOC emissions from LOOP's contemplated loading operations at the Marine Terminal meet the exemption standards established by 30 C.F.R. Part 550. No authorization or approval from any DOI agency is required prior to commencement of loading operations.

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[12] 30 C.F.R. § 550.303.

[13] 30 C.F. R. § 550.304.

[14] 30 C.F.R. § 550.303(d).

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Calculations to Determine Significance of VOC Emissions from Loading Operations at Marine Terminal

The Department of the Interior ("DOI") has jurisdiction over OCS air pollutant emissions sources in federal waters in the western Gulf of Mexico, and LOOP's operations, located in the Gulf of Mexico west of 87.5 degrees longitude, are subject to DOI regulation.

The regulations governing the air quality program are found at 30 C.F.R. Part 500. Sources subject to DOI's regime must comply with standards similar to those which EPA enforces only if their emissions would "significantly affect" a state's air quality. DOI applies a two-step exemption and significance determination approach. The projected emissions of volatile organic compounds ("VOCs") from any facility which is not exempt based on the analysis described below will be deemed to significantly affect the air quality in the nearest onshore area.

To determine whether a facility is exempt from further air quality review, the highest annual-estimated total amount of emissions of each air pollutant, from the facility and vessels serving it is compared to the emission exemption amount for each air pollutant calculated using the formulas provided. For volatile organic compounds ("VOCs"), the primary concern for an offshore loading facility, the exemption level is calculated by the following formula: $E = 33.3D$ (where E is the emission exemption amount expressed in tons per year, and D is the distance of the proposed facility from the closest onshore area of a State, expressed in statute miles).

The attached calculations depict two scenarios utilizing cargos with representative Reid Vapor Pressures ("RVP") of 4 and 8, a range of values between which the crude loaded by LOOP will fall. This yields calculated annual emissions of between 423.54 and 554.64 tons/year. Assuming that the loading operations take place 20.7 statute miles offshore, the maximum allowable VOCs to qualify LOOP for the exemption would be 689 tons/year. Therefore, even in the highest-emissions scenario, LOOP's emissions will not significantly affect the air quality in the nearest on-shore area and meet the standard for exemption from DOI regulation.

LOOP Marine Terminal
Loading Loss Emissions Calculation

Reference:
AP-42, Section 5.2 Transportation And Marketing Of Petroleum Liquids
Equation 2
Loading Loss: $C_L = C_A + C_G$

C_L = Loading Loss, lb/Mgal crude oil loaded
C_A = Arrival emission factor, contributed by vapors in the empty hold before loading, lb/Mgal
C_G = Generated emission factor, contributed by evaporation during loading, lb/Mgal loaded

Calculated Laoding Loss (lb VOC/Mgal)

C_L =	**0.840**	**Uncleaned**	<-- Selected
	0.500	Ballasted	
	0.390	Cleaned/Gas-free	

CA Factor	Hold Condition
0.86	Uncleaned
0.46	Ballasted
0.33	Cleaned/Gas-free

VLCC Loaded/yr =	12	
VLCC Capacity =	2,000,000	Bbls
Barrels Loaded =	24,000,000	Bbls/yr
Maximum short-term loading rate =	40,000	Bbls/hr

Equation 3

$C_G = 1.84(0.44P-0.42)MG/T$

Use the AP-42 emission factor developed based on loading of a previously "uncleaned" ship/barge.
This approach was concurred with by Rob Ferry based on the operational description.

P = True vapor pressure of loaded crude oil, psia =	2.6
M = Molecular weight of vapors, lb/lb-mole =	50
G = Vapor growth factor = 1.02	1.02
T = Temp of vapors, R =	528.08
Assumed weight percentage that is VOC =	85%

Calculated Annual Emissions =	423.54	tons/yr
Calculated Maximum Hourly Emissions =	1,411.80	lb/hr

All values per TANKS4.09 for RVP4 Crude as used in the Clovelly Farm emissions basis
Factors and formulas from AP-42 are for TOC, assume 85% is VOC per AP-42 guidance.

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C_A = Arrival emission factor, contributed by vapors in the empty hold before loading, lb/Mgal
C_G = Generated emission factor, contributed by evaporation during loading, lb/Mgal loaded

Calculated Laoding Loss (lb VOC/Mgal)

C_L =	**1.100**	**Uncleaned**	<-- Selected
	0.760	Ballasted	
	0.650	Cleaned/Gas-free	

CA Factor	Hold Condition
0.86	Uncleaned
0.46	Ballasted
0.33	Cleaned/Gas-free

VLCC Loaded/yr =	12	
VLCC Capacity =	2,000,000	Bbls
Barrels Loaded =	24,000,000	Bbls/yr
Maximum short-term loading rate =	40,000	Bbls/hr

Equation 3

$C_G = 1.84(0.44P-0.42)MG/T$

Use the AP-42 emission factor developed based on loading of a previously "uncleaned" ship/barge.
This approach was concurred with by Rob Ferry based on the operational description.

P = True vapor pressure of loaded crude oil, psia =	6.514
M = Molecular weight of vapors, lb/lb-mole =	50
G = Vapor growth factor = 1.02	1.02
T = Temp of vapors, R =	528.08
Assumed weight percentage that is VOC =	85%

Calculated Annual Emissions =	554.64	tons/yr
Calculated Maximum Hourly Emissions =	1,848.81	lb/hr

All values per TANKS4.09 for RVP8 Crude as used in the Clovelly Farm emissions basis
Factors and formulas from AP-42 are for TOC, assume 85% is VOC per AP-42 guidance.

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Crude Oil Storage Tank 600,000 Proposed Tank - External Floating Roof Tank
Lafourche Parish, Louisiana

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil RVP 8	All	69.99	64.84	75.14	68.06	6.5139	N/A	N/A	50.0000			207.00	Option 4: RVP=8
1,2,4-Trimethylbenzene						0.0302	N/A	N/A	120.1900	0.0033	0.0001	120.19	Option 2: A=7.04383, B=1573.267, C=208.56
2,2,4-Trimethylpentane (isooctane)						0.7891	N/A	N/A	114.2300	0.0010	0.0005	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.5308	N/A	N/A	78.1100	0.0060	0.0056	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cyclohexane						1.5780	N/A	N/A	84.1600	0.0070	0.0070	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Ethylbenzene						0.1524	N/A	N/A	106.1700	0.0040	0.0004	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.4667	N/A	N/A	86.1700	0.0040	0.0063	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isopropyl benzene						0.0693	N/A	N/A	120.2000	0.0010	0.0000	120.20	Option 2: A=6.93666, B=1460.793, C=207.78
Toluene						0.4474	N/A	N/A	92.1300	0.0100	0.0025	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						7.2120	N/A	N/A	49.4912	0.9497	0.9759	220.76	
Xylene (-m)						0.1273	N/A	N/A	106.1700	0.0140	0.0011	106.17	Option 2: A=7.009, B=1462.266, C=215.11